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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,237	03/04/2002	Hong Su	10013661-1	7188

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HEWLETT-PACKARD COMPANY
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EXAMINER

STEVENS, ROBERT

ART UNIT PAPER NUMBER

2176

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,237

Applicant(s)

SU ET AL.

Examiner

Robert M Stevens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-26 are pending in Application No. 10/091,237, entitled "Method and System of Document Transformation Between a Source XML Schema and a Target XML Schema", filed 3/4/2002 by Su et al. Claims 1, 10 and 18 are independent.
2. No Information Disclosure Statement has been filed as of the date of this communication.

Priority

3. Applicant makes no claim to either domestic or foreign priority.

Drawings

4. The Office notes that the drawings, in their current status, are informal. Note that they are, however, satisfactory for the purposes of examination.

Specification

5. The disclosure is objected to because of the following informalities:
- A. Page 7 line 25 "are" should be "is". Applicant is reminded to please correct all spelling/grammatical/etc. mistakes throughout the specification (including the claims and drawings).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 5-9, 11-12, 14, 16 and 22-26 are rejected under 35 USC 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 5, no implementation details were provided as to determining a "least cost" (last line of claim) and determining an "information capacity cost" (last line).

Claims 6-9 are dependent upon claim 5, and therefore likewise rejected.

Claims 22-26 are substantially similar to claims 5-9, respectively, and therefore likewise rejected.

Further regarding claim 6, no implementation details were provided as to determining a "cost of data loss" (lines 5-6).

Claim 7 is dependent upon claim 6, and therefore likewise rejected.

Claims 23-24 are substantially similar to claims 6-7, respectively, and therefore likewise rejected.

Further regarding claim 7, no implementation details were provided as to determining whether labels are synonymous (line 4).

Claim 24 is substantially similar to claim 7, and therefore likewise rejected.

Regarding claim 11, no implementation details were provided as to determining a “least associated cost of information capacity” (last line).

Claim 12 is dependent upon claim 11, and therefore likewise rejected.

Regarding claim 14, no implementation details were provided as to how to accomplish “folding nodes” (line 3).

Regarding claim 16, no implementation details were provided as to perform a “relabel operation” (lines 6-8) and an “unfold operation” (lines 6-7), and how to determine a “qmark identifier node” (last line).

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 5-9, 11-12, 14, 16 and 22-26 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 5, the recited language “least cost based on an information capacity cost” (last line) renders the claim scope ambiguous. How based? What criteria? Additionally, the limitation “information capacity cost” (last two lines) has not been adequately defined in the specification.

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Claims 6-9 are dependent upon claim 5, and therefore likewise rejected.

Claims 22-26 are substantially similar to claims 5-9, respectively, and therefore likewise rejected.

Further regarding claim 6, the recited language “high quality” (line 5) renders the claim scope ambiguous. At what point is quality considered “high”? Additionally, the limitation “associated cost of data loss” (lines 5-6) has not been adequately defined in the specification.

Claim 7 is dependent upon claim 6, and therefore likewise rejected.

Claims 23-24 are substantially similar to claims 6-7, respectively, and therefore likewise rejected.

Further regarding claim 7, the recited language “identical label or synonymous label” (line 4) renders the claim scope ambiguous. Which limitation is being claimed?

Claim 24 is substantially similar to claim 7, and therefore likewise rejected.

Regarding claim 11, the limitation “least associated cost of data loss” (last line) has not been adequately defined in the specification.

Claim 12 is dependent upon claim 11, and therefore likewise rejected.

Regarding claim 14, the limitation “folding nodes” (line 3) has not been adequately defined in the specification.

Regarding claim 16, the limitations “relabel operation” (lines 6-8) and an “unfold operation” (lines 6-7), and “qmark identifier node” (last line) have not been adequately defined in the specification.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

11. **Claims 1, 3-15, 18 and 20-26 are rejected under 35 USC 102(a)** as being anticipated by Euna Jeong et al (“Induction of Integrated View for XML Data with Heterogeneous DTDs”, CIKM '01, Nov. 5-10, 2001, ACM 1-581 (13-436-3/01/0011), pp. 151-158, hereafter referred to as “Jeong”).

Regarding independent claim 1, Jeong discloses:

A method of document transformation comprising:

a) modeling a source XML document corresponding source schema source tree having a plurality of source nodes; (p. 153 Table 4 re: row 1 and DTD “eg1”)

b) modeling a target XML document corresponding target schema nodes; (p. 153 Table 4 re: row 1 and DTD “eg2”) and

c) generating a sequence of transformation operations that transforms said source tree to said target tree. (p. 151 re: "(2) ... generate a set of tree grammar rules")

Regarding claim 3, which is dependent upon claim 1, Jeong further discloses:

*wherein c) comprises:
 matching said plurality of source nodes to said plurality of target nodes. (p. 155, 3.2.2 Tree Matrix, re: "use of a ... matching method between two trees")*

Regarding claim 4, which is dependent upon claim 1, Jeong further discloses:

*wherein c) comprises:
 automatically generating said sequence of transformation operations. (p. 151 re: "(2) ... generate a set of tree grammar rules")*

Regarding claim 5, which is dependent upon claim 1, Jeong further discloses:

*d) for each source node in said source schema, selecting a plurality of candidate nodes in said target schema that are possible matches; (p. 155 1st sentence below Fig. 4 "with all possible matchings ... identified")
 e) for each source node in said source schema, generating a transforming to each of said plurality of candidate nodes; (p. 155 3rd sentence below Fig. 4 "The second step is to compute the minimum number of operations ...") and
 f) for each source node in said source schema, selecting one of said plurality of node transformation sequences, a selected node transformation sequence, for said sequence of transformation operations that is associated with a least cost based on an information capacity cost criteria. (p. 155, 3.2.2 Tree matrix, especially the two paragraphs below Fig. 4 discussing computing of operations [transform sequences] and cost)*

Regarding claim 6, which is dependent upon claim 5, Jeong further discloses:

a match between a source node and a target node, selecting said selected node transformation sequence to achieve a high quality match (p. 155 3rd sentence below Fig. 4 "The second step is to compute the

minimum number of operations ...”), when an associated cost data loss is than a second cost of data when deleting information contained in said source node, in a first iteration of matching. (p. 155, 3.2.2 Tree matrix, especially the two paragraphs below Fig. 4 discussing computing of operations [transform sequences] and cost)

Regarding claim 7, which is dependent upon claim 6, Jeong further discloses:

matching said source node target node having an label to achieve said high quality match. (p. 155 1st paragraph under 3.2.2 Tree Matrix re: computing distance between labeled trees and p. 155 3rd sentence below Fig. 4 “The second step is to compute the minimum number of operations ...”)

Regarding claim 8, which is dependent upon claim 5, Jeong further discloses:

wherein f) further comprises:

a match between a selecting said selected node transformation sequence when an associated cost of data loss is less than a second data loss when deleting source information contained in said source node and adding target information in said target node, second iteration of matching. (p. 155, 3.2.2 Tree matrix, especially the two paragraphs below Fig. 4 discussing computing of operations [transform sequences] and cost and the removal of nodes [in 2nd paragraph])

Regarding claim 9, which is dependent upon claim 5, Jeong further discloses:

wherein f) further comprises:

selecting said selected node transformation sequence of data loss. (p. 155, 3.2.2 Tree matrix, especially the two paragraphs below Fig. 4 discussing computing of operations [transform sequences] and cost)

Regarding independent claim 10, Jeong discloses:

A method of document transformation comprising:

a) modeling a source schema of XML and a target schema of XML as a tree structure creating a source tree and a target tree, source tree having a plurality of source nodes, said target tree having a plurality of target nodes; (Regarding source: p. 153 Table 4 re: row 1 and DTD “eg1”, Regarding target: p. 153 Table 4 re: row 1 and DTD “eg2”) and

b) generating a sequence of transformation operations that transforms said source XML document to said target XML document (p. 151 re: "(2) ... generate a set of tree grammar rules"), wherein said plurality of source nodes of said source schema are matched and transformed to said plurality of target nodes in said target schema. (p. 155, 3.2.2 Tree Matrix, re: "use of a ... matching method between two trees")

Regarding claim 11, which is dependent upon claim 10, Jeong further discloses:

wherein b) comprises:

b1) each source node in said source tree, selecting a plurality of candidate nodes in said target tree that are possible matches; (p. 155 1st sentence below Fig. 4 "with all possible matchings ... identified")

b2) for each source node in said source tree, generating a plurality of node transformation operations transforming to each of said plurality of candidate nodes; (p. 155 3rd sentence below Fig. 4 "The second step is to compute the minimum number of operations ...") and

b3) for each source node in said source tree, selecting one of said plurality of node transformation operations forming a selected node transformation operation having the least associated cost of information capacity. (p. 155, 3.2.2 Tree matrix, especially the two paragraphs below Fig. 4 discussing computing of operations [transform sequences] and cost)

Regarding claim 12, which is dependent upon claim 11, Jeong further discloses:

combining said selected node transformation operation for each of said source nodes matched to a target node a sequence of transformation operations that transforms said source schema to said target schema. (p. 151 re: "(2) ... generate a set of tree grammar rules")

Regarding claim 13, which is dependent upon claim 10, Jeong further discloses:

wherein said source schema is a source document type definition (DTD) and said target schema a target DTD. (p. 153, Table 4, Row 1, source DTD = "eg1" and Target DTD = "eg2")

Regarding claim 14, which is dependent upon claim 10, Jeong further discloses:

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folding nodes in said source and target trees preprocessing phase to find one-to-one node matching. (p. 155, last three paragraphs of 3.2.2 Tree Matrix discuss “divide-and-conquer” subtree processing)

Regarding claim 15, which is dependent upon claim 10, Jeong further discloses:

merging nodes in said source and target trees preprocessing phase to find one-to-one node matching. (p. 155, 3.2.2 Tree Matrix, especially 2nd paragraph disclosing “(3) parent-child merging” and “(4) sibling merging”)

Regarding independent claim 18, Jeong discloses:

*A computer system comprising:
a processor; (inherent in Fig. 1 of p. 152) and
a computer readable memory coupled to said processor and
containing program instructions that, when executed, implement a method
of document transformation (inherent in Fig. 1 of p. 152) comprising:
modeling a source document corresponding to a source
schema as a source tree having a plurality of source nodes; (p. 153
Table 4 re: row 1 and DTD “eg1”)
modeling a target document corresponding to a target
schema as a target tree having a plurality of target nodes; (p. 153
Table 4 re: row 1 and DTD “eg2”) and
generating a sequence of transformation operations that
transforms said source tree to said target tree. (p. 153 Table 4 re:
row 1 and DTD “eg2”)*

Regarding claims 20-26, these claims are substantially similar to claims 3-9, respectively, and therefore likewise rejected.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 2, 17 and 19 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Euna Jeong et al ("Induction of Integrated View for XML Data with Heterogeneous DTDs", CIKM '01, Nov. 5-10, 2001, ACM 1-581 (13-436-3/01/0011), pp. 151-158, hereafter referred to as "Jeong") in view of Geiger et al (US Patent Application Publication No. 2002/0112048, filed Dec. 11, 2000, hereafter referred to as "Geiger").

Regarding claim 2, which is dependent upon claim 1, the limitations of claim 1 have been previously addressed.

However, Jeong does not explicitly disclose:

d) converting said sequence of transformation operations into an Extensible Stylesheet Language for Transformations (XSLT) script.

Geiger, though, discloses:

d) converting said sequence of transformation operations into an Extensible Stylesheet Language for Transformations (XSLT) script.
([0011], teaching the use of XSLT as an XML-based template language)

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Geiger for the benefit of Jeong, because to do so

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would allow a programmer to use a flexible language like XML in constructing templates (or pattern matchers) having both declarative and imperative characteristics, as taught by Geiger in [0007] and [0011]. These references were all applicable to the same field of endeavor, i.e., XML document transformation.

Regarding claim 17, this claim is substantially similar to claim 2, and therefore likewise rejected.

Regarding claim 19, this claim is substantially similar to claim 2, and therefore likewise rejected.

14. **Claim 16 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Euna Jeong et al ("Induction of Integrated View for XML Data with Heterogeneous DTDs", CIKM '01, Nov. 5-10, 2001, ACM 1-581 (13-436-3/01/0011), pp. 151-158, hereafter referred to as "Jeong") in view of the "Oracle9i XML Reference, Release 1 (9.0.1)" (Part No. A88899-01, Oracle Corp., Redwood City, CA, Jun. 2001, pp. i to x and 1-30 to 1-33, hereafter referred to as "Oracle9i").

Regarding claim 16, which is dependent upon claim 10, the limitations of claim 10 have been previously addressed.

Jeong further discloses:

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performing transformation operations only once at a tree and said target tree with the following exceptions (p. 155, 1st paragraph below Fig. 4, discussing the computation of a “minimum number of operations”):

a relabel operation following an unfold operation; (p. 154, 3.1 Renamer, especially “element name can be renamed”)

said unfold operation following said relabel operation; (p. 155, last three paragraphs of 3.2.2 Tree Matrix, especially the last paragraph discussing node removal)

... .

However, Jeong does not explicitly disclose:

said relabel operation performed between an attribute and an element following or followed by a deletion or an addition of a qmark quantifier node.

Oracle9i, though, discloses:

said relabel operation performed between an attribute and an element following or followed by a deletion or an addition of a qmark quantifier node. (p. “1-33” discloses the use of QMARK)

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Oracle9i for the benefit of Jeong, because to do so would provide a programmer with an appropriate class member for identifying a qmark node type value in a DTD element declaration, as taught by Oracle9i on page “1-30”.

These references were all applicable to the same field of endeavor, i.e., XML document transformation.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Non-patent Literature

De Boer, Berend, "Tutorial: don't be afraid of XSLT", eurotex 2001, Sep. 2001, pp. 1-17.

"eurotex 2001: The Program", Sep. 2001, pp. 1-3 (downloaded from www.ntg.nl/eurotex/program.html).

"eurotex 2001: The Presentations and Tutorials", Sep. 2001, pp. 1-2 (downloaded from www.ntg.nl/eurotex/presentations.html).

De Boer, Berend, "From Database to Presentation via XML, XSLT and ConTEXT", dtd: Jan. 28, 2002, pp. 52-67.

Harold, Elliotte Rusty, XML Bible, 2nd Edition, "Chapter 17: XSL Transformations", Hungry Minds, Inc., Indianapolis, IN, Internet download of web page dated Aug. 2, 2001, pp. 1-70 (plus Wayback Machine citation/URL).

Soinio, Timi, "Using XML in Web Services: Vision of the Future", Univ. of Tampere, Dept of Computer and Info Sciences, Masters Thesis, Jun. 2000, pp. Abstract and 28-32 (plus Google search entry, which provides URL for this paper).

Qiang, Cao Xiao, "IBM WebSphere Software Platform for e-Business: XML Review", IBM Solution Enablement Center Presentation, May 19, 2001, pp. 1-20.

US Patent Application Publications

Yassin et al	US2004/0205549
Hellman et al	US2004/0216030
Houben et al	US2002/0147745
Tosun et al	US2002/0143644
Chen et al	US2002/0111964
Sluiman	US2002/0194220
Jakubowski	US2002/0143821
Ballantyne et al	US2001/0044811

US Patents

Brooke et al	6,763,343
Mani et al	6,654,734
Yalcinalp	6,507,857

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M Stevens whose telephone number is (571) 272-4102. The examiner can normally be reached on M-F 6:00 - 2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272-4090. The current fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Additionally, the main number for Technology Center 2100 is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert M. Stevens
Art Unit 2176
Date: November 3, 2004

rms


JOSEPH FEILD
SUPERVISORY PATENT EXAMINER